AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A nano-porous metal oxide semiconductor with a band-gap of greater than 2.9 eV in-situ spectrally sensitized on its internal and external surface with metal chalcogenide nano-particles with a band-gap of less than 2.9 eV comprising at least one metal chalcogenide, wherein said nano-porous metal oxide further comprises a ~~phosphoric acid or~~ a phosphate, and wherein said metal chalcogenide is selected from the group consisting of lead sulphide, cadmium sulphide, silver sulphide, indium sulphide, copper sulphide, cadmium selenide, copper selenide, indium selenide, cadmium telluride and mixtures thereof.

2. (Previously Presented) The nano-porous metal oxide according to claim 1, wherein said metal oxide is selected from the group consisting of titanium oxides, tin oxides, niobium oxides, tantalum oxides and zinc oxides.

3. (Canceled).

4. (Withdrawn) A process for in-situ spectral sensitization of nano-porous metal oxide semiconductor with a band-gap of greater than 2.9 eV on its internal and external surface with metal chalcogenide nano-particles with a band-gap of less than 2.9 eV, containing at least one metal chalcogenide, comprising a metal chalcogenide-forming cycle comprising the steps of: contacting nano-porous metal oxide with a solution of metal ions; contacting nano-porous metal oxide with a solution of chalcogenide ions; and subsequent to metal chalcogenide formation rinsing said nano-porous metal oxide with an aqueous solution containing a phosphoric acid or a phosphate.

5. (Withdrawn) Process according to claim 4, wherein said contact with a solution of metal ions occurs before said contact with a solution of chalcogenide ions.

6. (Withdrawn) Process according to claim 4, wherein said metal chalcogenide-forming cycle is repeated.

7. (Withdrawn) Process according to claim 4, wherein said solution of metal ions contains a triazole or diazole compound.

8. (Withdrawn) Process according to claim 4, wherein said solution of metal ions and said solution of chalcogenide ions contains a triazole or diazole compound.

9. (Withdrawn) Process according to claim 4, wherein said solution of chalcogenide ions contains a triazole or diazole compound.

10. (Withdrawn) Process according to claim 4, wherein said nano-porous metal oxide is selected from the group consisting of titanium oxides, tin oxides, niobium oxides, tantalum oxides and zinc oxides.

11. (Withdrawn) Process according to claim 4, wherein said nano-porous metal oxide further contains a triazole or diazole compound.

12. (Previously Presented) A photovoltaic device comprising a nano-porous metal oxide semiconductor with a band-gap of greater than 2.9 eV in-situ spectrally sensitized on its internal and external surface with metal chalcogenide nano-particles with a band-gap of less than 2.9 eV comprising at least one metal chalcogenide, wherein said nano-porous metal oxide further comprises a phosphoric acid or a phosphate.

13. (Previously Presented) The photovoltaic device according to claim 12, wherein said nano-porous metal oxide is selected from the group consisting of titanium oxides, tin oxides, niobium oxides, tantalum oxides and zinc oxides.

14. (Previously Presented) The photovoltaic device according to claim 12, wherein said nano-porous metal oxide further comprises a triazole or diazole compound.

15. (Currently Amended) A ~~second~~ photovoltaic device comprising a nano-porous metal oxide semiconductor with a band-gap of greater than 2.9 eV in-situ spectrally sensitized on its internal and external surface with metal chalcogenide nano-particles with a band-gap of less than 2.9 eV comprising at least one metal chalcogenide prepared according to a process for in-situ spectral sensitization of nano-porous metal oxide semiconductor comprising a metal chalcogenide-forming cycle comprising the steps of: contacting nano-porous metal oxide with a solution of metal ions; contacting nano-porous metal oxide with a solution of chalcogenide ions; and subsequent to metal chalcogenide formation rinsing said nano-porous metal oxide with an aqueous solution comprising a phosphoric acid or a phosphate.

16. (Currently Amended) The ~~second~~ photovoltaic device according to claim 15, wherein said contact with a solution of metal ions occurs before said contact with a solution of chalcogenide ions.

17. (Currently Amended) The ~~second~~ photovoltaic device according to claim 15, wherein said metal chalcogenide-forming cycle is repeated.

18. (Currently Amended) The ~~second~~ photovoltaic device according to claim 15, wherein said solution of metal ions further comprises a triazole or diazole compound.

19. (Currently Amended) The ~~second~~ photovoltaic device according to claim 15, wherein said solution of metal ions and said solution of chalcogenide ions further comprises a triazole or diazole compound.

20. (Currently Amended) The ~~second~~ photovoltaic device according to claim 15, wherein said solution of chalcogenide ions further comprises a triazole or diazole compound.

21. (Currently Amended) The ~~second~~ photovoltaic device according to claim 15, wherein said nano-porous metal oxide is selected from the group consisting of titanium oxides, tin oxides, niobium oxides, tantalum oxides and zinc oxides.

22. (Previously Presented) The photovoltaic device according to claim 15, wherein said nano-porous metal oxide further comprises a triazole or diazole compound.

23. Canceled.

24. Canceled.

25. (Previously Presented) A nano-porous metal oxide semiconductor with a band-gap of greater than 2.9 eV in-situ spectrally sensitized on its internal and external surface with metal chalcogenide nano-particles with a band-gap of less than 2.9 eV comprising at least one metal chalcogenide, wherein said nano-porous metal oxide further comprises a phosphate and a triazole or diazole compound and said metal chalcogenide is selected from the group consisting of lead sulphide, cadmium sulphide, silver sulphide, indium sulphide, copper sulphide, cadmium selenide, copper selenide, indium selenide, cadmium telluride and mixtures thereof.

26. (Previously Presented) A nano-porous metal oxide semiconductor with a band-gap of greater than 2.9 eV in-situ spectrally sensitized on its internal and external surface with metal chalcogenide nano-particles with a band-gap of less than 2.9 eV comprising at least one metal chalcogenide, wherein said nano-porous metal oxide further comprises a phosphate or phosphoric acid and a triazole or diazole compound.

27. (Previously Presented) Nano-porous metal oxide according to claim 26, wherein said metal oxide is selected from the group consisting of titanium oxides, tin oxides, niobium oxides, tantalum oxides and zinc oxides.

28. (Previously Presented) A nano-porous metal oxide semiconductor with a band-gap of greater than 2.9 eV in-situ spectrally sensitized on its internal and external surface with metal chalcogenide nano-particles with a band-gap of less than 2.9 eV comprising at least one metal chalcogenide, wherein said nano-porous metal oxide further comprises a phosphoric acid.

29. (Previously Presented) The nano-porous metal oxide according to claim 28, wherein said metal oxide is selected from the group consisting of titanium oxides, tin oxides, niobium oxides, tantalum oxides and zinc oxides.

This listing of claims replaces all prior versions, and listings, of claims in the application.